CALIFORNIA AIR RESOURCES BOARD
AB 32 Global Warming Solutions Act

CAP-AND-TRADE PUBLIC MEETING
CONCEPT PAPER

EMISSIONS LEAKAGE ISSUES IN A CALIFORNIA CAP-AND-TRADE PROGRAM

BACKGROUND

This concept paper is being released in advance of an April 13, 2009 meeting on identifying and assessing potential emissions leakage issues in a California greenhouse gas cap-and-trade program. The purpose is to provide the background necessary to discuss how to identify and assess emissions leakage for potential emissions-intensive and trade-exposed industries.

ARB is holding this meeting as part of the rulemaking effort for designing the cap-and-trade program (program). There are many details that need to be discussed before we take the proposed rule to the Board in 2010. We are involving stakeholders to work through the detailed elements of California's program design in a transparent process.

FRAMEWORK FOR DISCUSSION

Overview

The Global Warming Solutions Act of 2006 (AB 32) directs the Air Resources Board (ARB) to design all greenhouse gas (GHG) regulations to minimize leakage.[1] This requirement has lead ARB to examine what factors might cause leakage, such as relocation of industries or loss of foregone growth in production capacity as new investment capital seeks lower-cost locations, competitiveness from industries not subject to similar reduction requirements, or loss of market share. Staff is exploring program design features that can minimize emissions-related leakage and economic loss.

How to Identify Emissions Leakage Risk

ARB proposes to consider two key indicators of leakage risk.

First, we propose to assess potential cost increases due to program compliance costs. Increased costs associated with compliance could result either from the costs of actions taken to reduce emissions at the facility; and costs of acquiring emission allowances to cover remaining emissions after all actions to reduce emissions are taken at the facility.

Second, we propose to assess the ability of industries to pass compliance costs on to their customers. If industries have limited ability to pass on costs because their competitors are not subject to similar emission reduction requirements or compliance

[1] Health and Safety Code Section 38562(a)(8)

costs, then the risk of leakage may be heightened. Existing producers may lose market share, and new investment may shift to regions that do not have similar program requirements. The ability to pass costs on to customers can depend on factors such as market concentration, the market power of a given firm or sector, or the degree to which a market is open to competition outside of the jurisdiction.

How Other Programs Identify and Address Leakage Risk

Currently, the European Union Emission Trading Scheme (EU ETS) and the Australian Carbon Pollution Reduction Scheme (CPRS) are exploring methods for assessing whether an industry will have substantial product price increases due to emission reduction requirements, and whether that industry will have a limited ability to pass those increased costs on to consumers. Each program is considering methodologies to measure the impacts of competitiveness and leakage within their systems.

European Union Emissions Trading Scheme and the Commission Services Paper[2]

The European Commission plans to identify sectors in its program that may be vulnerable to emissions leakage in June 2010 in time for the initiation of Phase III (2013–2020) of its cap-and-trade program.

In September 2008, the European Commission issued a Commission Services Paper that presents a methodology to measure the impacts of competitiveness and emissions leakage on various sectors.

The EU ETS Commissions Services Paper uses a two-step methodology:

1) Measure the impacts of the EU ETS on energy-intensive sectors,[3] and
2) Account for other market factors (e.g., transportation costs, market protection policies, and geographic scope and concentration).

1) Measure the Impacts of EU ETS on Energy-Intensive Sectors

- Defining a sector: A sector or sub-sector is defined at a high level of disaggregation to ensure the specificities of the production processes. Both direct and indirect emissions need to be taken into account.

- Potential product price increases: Additional costs as a result of the EU ETS can be calculated by using a standardized electricity input fuel mix and

[2] The European Commission, Commission Services Paper on Energy Intensive Industries Exposed to Significant Risk of Carbon Leakage, September 2008

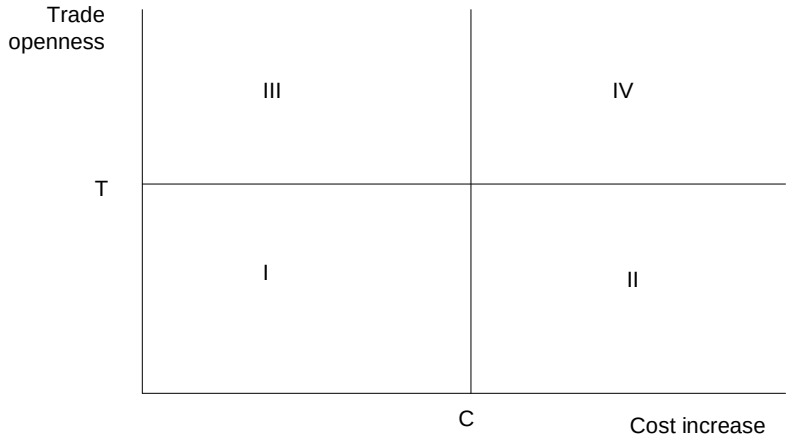
[3] A business is considered as being energy intensive where the purchases of energy products and electricity account to at least 3.0% of its production value as defined by the Energy Products Tax directive (Directive 2003/96 EC). EU focuses the scope of the assessment to energy intensive industries.

assuming full pass through of allowance costs in electricity prices. These can subsequently be expressed in terms of product price increases.

- Exposure to international trade: Exposure to non-EU trade will be used as an approximation while other indicators such as price elasticities are desirable.

Based on how open a sector is to non-EU trade and the cost increase associated with increased auctioning in EU ETS Phase III, sectors can be classified into four groups to assess their potential for leakage. (See Figure 1 below.)

Figure 1: Assessment of leakage risk based on cost increase and openness to non-EU trade[4]



Where: Each quadrant represents the degree to which a sector or sub-sector is potentially exposed to a degree of risk of emissions leakage, such that

I is exposed to low or zero risk of emissions leakage
II is exposed to low-to-moderate risk of emissions leakage
III is exposed to moderate-to-high risk of emissions leakage, and
IV is exposed to a high risk of emissions leakage

2) Account for Other Market Factors

The analysis in Step 1 is complemented by a second step in which other factors are taken into account, e.g., factors that affect the openness of a specific market including transportation costs, market protection policies, and its geographic scope and concentration. These additional factors would be considered in a qualitative manner to more accurately assess the potential for leakage in the (sub) sectors and activities evaluated in Step 1. Results of the two step assessment will ultimately inform the quadrant in Figure 1 that a specific (sub) sector or activity would fall into.

[4] The European Commission, Commission Services Paper on Energy Intensive Industries Exposed to Significant Risk of Carbon Leakage, September 2008, p.2.

In December 2008, European Union heads of state and government agreed on more specific methodologies and thresholds to identify the sectors or sub-sectors potentially exposed to a significant risk of emissions leakage[5].

Following the results of the international negotiations at the December 2009 Conference of Parties (COP) 15, and informed by the two step methodology of the Commission Services Paper, the European Commission will make its final decision on which emission-intensive industries qualify as vulnerable to emissions leakage.

Australia Carbon Pollution Reduction Scheme (CPRS)

In July 2008, the Australian CPRS published a Green Paper[6] which proposed an assistance program for emissions-intensive trade-exposed (EITE) industries that face risks of emissions leakage.

The Green Paper used a two-step methodology to determine who would receive assistance based on their exposure to emissions leakage. The methodology assesses:

1) emissions intensity, and
2) cost pass-through ability.

1) Assess Emissions Intensity

- Define a sector: The Green Paper compared several options for defining who could qualify as an EITE industry. The Australian Government found it preferable to define qualification in the EITE assistance program based on a production process within an industry, such as clinker production, newsprint manufacturing, and float glass production.
- Assess emissions intensity: The Green Paper identifies three broad categories of emissions:

    1) Direct emissions associated with the production activity or process and covered by the scheme
    2) Indirect emissions from electricity generation
    3) Indirect emissions from sources other than electricity, including emissions generated in the production of inputs and pre- and post- production activities

[5] The Council of the European Union, Energy and climate change – Elements of the final compromise (17215/08), 12 December 2008.

[6] The Department of Climate Change, Commonwealth of Australia, Carbon Pollution Reduction Scheme Green Paper, July 2008.

2) Assess Cost Pass-Through Ability

The Green Paper considered several options to assess cost pass-through ability to determine which industries could pass through product cost increases. The following indicators were analyzed:

- The proportion of exports and imports relative to domestic production (trade shares);
- The measure of responsiveness to price changes (price elasticity) of individual products; and
- Correlations between relevant global and domestic prices for goods produced in Australian industries, appropriately adjusted for exchange rates.

Based on stakeholder comments on the Green Paper, the Australian Government released a White Paper[7] that presented their preferred methodology to evaluate the emissions intensity and cost pass-through ability of industries.

The methodology presented in the White Paper to assess emissions intensity was emissions intensity per unit of revenue or value added[8].

The White Paper also states that any one indicator could not accurately assess cost pass-through ability, and therefore suggested using trade exposure as the primary indicator which could be measured by:

- Price elasticity
- Import and export parity prices[9]
- Trade shares[10]
- Qualitative assessment of international competition

[7] The Department of Climate Change, Commonwealth of Australia, Carbon Pollution Reduction Scheme White Paper, 15 December 2008

[8] Value added is earnings or revenue minus costs of bought in goods and services. Value added can include labor costs and operational profits or loss.

[9] The import parity price is calculated by converting the world price for the product into local currency and adjusting for transport, tariff and other costs. Export parity price is calculated by converting the world price into local currency and removing any transport, tariff (in the destination market) and other costs the supplier would incur if exporting. If the price an entity receives for the goods it produces is directly related to the international parity price, it may provide an indication that the entity is exposed to international competition.

[10] Trade share can be defined as the ratio of the traded quantity of a product relative to domestic production.

REFERENCES

Background Materials

Carbon Trust, *EU ETS Impacts on Profitability and Trade*, Carbon Trust, London, 2008.

Julia Reinaud, *Trade, Competitiveness and Carbon Leakage: Challenges and Opportunities,* Chatham House, London 2009.

European Commission Directorate General for Environment, McKinsey & Company and Ecofys, *EU ETS Review: Report on International Competitiveness*, 2006.

Houser et al, *Leveling the carbon playing field*, Peterson Institute for International Economics, World Resources Institute, Washington DC, 2008.

Ho et al, *Impact of Carbon Price Policies on U.S. Industry*, Resources for the Future, Washington DC, 2008.

Bataille et al, *Pricing GHG emissions: The Impact on Canada's Competitiveness*, C.D. Howe Institute, Toronto, 2009.

EU Emission Trading Scheme

- 'Carbon leakage': A challenge for EU industry
  http://www.euractiv.com/en/climate-change/carbon-leakage-challenge-eu-industry/article-176591
- Commission Services Paper
  http://www.euractiv.com/en/climate-change/eu-considers-industries-exposed-carbon-leakage/article-175583

Australian Carbon Pollution Reduction Scheme

- Industry Assistance
  http://www.climatechange.gov.au/whitepaper/assistance/index.html
- Green Paper (Chapter 9)
  http://www.climatechange.gov.au/greenpaper/report/pubs/greenpaper-ch9.pdf
- White Paper (Chapter 12)
  http://www.climatechange.gov.au/whitepaper/report/pubs/pdf/V2012Chapter.pdf